

What is claimed is:

1. A melt-processible polymeric material comprising:  
a major portion of an olefinic polymer component selected from at least one of polyalkylenes, copolymers of polyalkylenes, wherein at least one alkylene monomeric unit contains between 2 and 6 carbon atoms; and  
a minor portion of a non-olefinic polymer component selected from at least one of thermoplastic polyamides, thermoplastic polyesters derived from ethylene glycol, thermoplastic polycarbonate and amorphous thermoplastic rubbers;  
wherein the major portion and the minor portion are present in orientable alloyed relationship.
2. The melt processible polymeric material of claim 1 wherein the olefinic polymer component has a first melt flow index and the polymer component composing the minor portion has a second melt flow index, wherein the first melt flow index is lower than the second melt flow index.
3. The melt processible polymeric material of claim 1 wherein the olefinic polymer component is at least one of polypropylene and copolymers of polypropylene.
4. The melt processible polymeric material of claim 3 wherein the thermoplastic polyamide contains at least one of polyamide 6, polyamide 6,6, polyamide 11, polyamide 12.
5. The melt processible polymeric material of claim 3 wherein the thermoplastic polyester derived from ethylene glycol is at least one of polyethylene terephthalate, polybutylene terephthalate and polytetramethylene terephthalate.
6. The melt processible polymeric material of claim 3 wherein the thermoplastic polycarbonate is at least one of straight chain polycarbonate and branched polycarbonate.

7. The melt processible polymeric material of claim 1 wherein the major portion of the olfenic polymer component is present in an amount between 40 and 95 % by material weight and wherein the polymer of the minor portion is present in an amount between 10 and 35 % by material weight.
8. The melt processible polymeric material of claim 7 wherein the olefinic polymer is present in an amount between 65 and 85 % by material weight and wherein the polymer component of the minor portion is present in an amount between 15 and 30 % by material weight.
9. The melt processible polymeric material of claim 6 wherein the melt processible material is granular or pelletized material and wherein the polymer of the minor portion is randomly dispersed within the major portion.
10. The melt processible polymeric material of claim 9 further comprising at least one primary migratory compatibilizer present in an amount sufficient to promote orientational positioning of the major olefinic polymer portion relative to the minor non-olefinic polymer portion upon application of an orientational inducement pressure such as heat.
11. The melt processible polymeric material of claim 10 wherein the at least one primary migratory compatibilizer is a material capable of promoting bonding at interfacial locations between the non-olefinic and the olefinic polymer.
12. The melt processible material of claim 10 wherein the at least one primary migratory compatibilizer is a siloxane oil.
13. A melt-processible polymeric material comprising:  
a major portion of an olefinic polymer component selected from at least one of polyalkylenes, copolymers of polyalkylenes, wherein at least one alkylene

monomeric unit contains between 2 and 6 carbon atom, the olefinic polymer having a first melt flow index; and

a minor portion of a non-olefinic thermoplastic polymer component, the non-olefinic thermoplastic polymer having a second melt flow index and selected from the group consisting of thermoplastic polyamides, thermoplastic polyesters derived from ethylene glycol, and thermoplastic polycarbonates;

wherein the first melt flow index is lower than the second melt flow index.

14. The melt-processible polymeric material of claim 13 further comprising at least one migratory compatibilizer present in an amount sufficient to promote orientational positioning of the non-olefinic thermoplastic polymer relative to the olefinic polymer upon application of an orientational inducement event such as heat.

15. The melt processible polymeric material of claim 13 wherein the at least one first primary migratory compatibilizer is a material capable of promoting bonding at interfacial locations between the olefinic polymer and non-olefinic thermoplastic polymer.

16. The melt-processible polymeric material of claim 14 further comprising at least one secondary migratory compatibilizer present in an amount sufficient to promote orientational positioning of the olefinic polymer of the major portion relative to the non-olefinic thermoplastic polymer of the minor portion upon application of an orientational inducement pressure such as heat.

17. The melt processible material of claim 13 further comprising at least one second migratory compatibilizer, the at least one second migratory compatibilizer present in an amount below that required to provide full functional compatibilization to the polymeric components, the second migratory compatibilizer being at least one of the group which includes maleic anhydride, copolymers of

maleic anhydride and olefinic compounds having monomeric units of at least 2 to 6 carbon atoms, and maleic anhydride rubbers.

18. The melt processible polymeric material of claim 13 wherein the olefinic polymer is selected from at least one of polypropylene and copolymers of polypropylene.

19. The melt processible polymeric material of claim 18 wherein the non-olefinic thermoplastic is a thermoplastic polyamide selected from at least one of polyamide 6, polyamide 6,6, polyamide 11 and polyamide 12.

20. The melt processible polymeric material of claim 18 wherein the thermoplastic polyester derived from ethylene glycol is at least one of polyethylene terephthalate and polytetramethylene terephthalate.

21. The melt processible polymeric material of claim 18 wherein the thermoplastic polycarbonate is at least one of straight chain polycarbonate and branched polycarbonate.

22. The melt processible polymeric material of claim 18 wherein the major portion of olefinic material is present in an amount between 40 and 95 % by material weight and wherein the non-olefinic thermoplastic polymer of the minor portion is present in an amount between 10 and 35 % by material weight.

23. A molded workpiece having at least one outwardly oriented surface and an interior region, the molded workpiece composed of a thermoplastic material, the thermoplastic material comprising:

an olefinic polymer component selected from at least one of polyalkylenes, copolymers of polyalkylenes, wherein at least one alkylene monomeric unit contains between 2 and 6 carbon atoms; and

at least one non-olefinic polymer component, the non-olefinic polymer component being at least from the group which includes polyamides, polycarbonates, polyesters derived from ethylene glycol, and amorphous thermoplastic rubbers; and  
at least one migratory compatibilizing agent;

wherein the at least one non-olefinic polymer component is present at elevated concentrations relative to the olefinic polymer component at a region proximate to the outwardly oriented surface of the workpiece and the olefinic polymer component is present in concentrations relative to the non-olefinic polymer component in the interior region of the workpiece and wherein the first migratory compatibilizer is present as discrete platelets at interfacial regions between the non-olefinic polymer component and the olefinic polymer component.

24. The molded work piece of claim 23 wherein the olefinic polymer component is selected from at least one of polypropylene and copolymers of polypropylene.

25. The molded work piece of claim 24 wherein the at least one non-olefinic polymer component is a thermoplastic polyamide from at least one of polyamide 6, polyamide 6,6, polyamide 11 and polyamide 12.

26. The molded work piece of claim 24 wherein the thermoplastic polyester is at least one of polybutylene terephthalate, polyethylene terephthalate and polytetramethylene terephthalate.

27. The molded work piece of claim 24 wherein the at least one non-olefinic polymer compound is selected from at least one of linear polycarbonates and branched polycarbonates.

28. The molded workpiece of claim 23 wherein the thermoplastic material is oriented such that the at least one non-olefinic component has a

concentration gradient throughout the workpiece and a concentration maximum proximate to the outwardly oriented surface of the workpiece.

29. The molded workpiece of claim 24 wherein the olefinic component is selected from at least one of polypropylene and copolymers of polypropylene.

30. The molded workpiece of claim 24 wherein the migratory agent is siloxane oil present as discrete platelets at locations interfacial regions throughout the workpiece, the interfacial regions characterized as having at least some polyamide polymer and at least some olefinic polymer in coordinated contact therewith.

31. A method for preparing a polymeric composition suitable for use in molding processes, the method comprising the steps of:

agitating an amount of a non-olefinic thermoplastic, the non-olefinic thermoplastic having a first elevated processing temperature, the agitation progressing for an interval and at an temperature sufficient to maintain the thermoplastic polyamide in an essentially molten state wherein the non-olefinic thermoplastic is at least one of thermoplastic polyamides, polyesters derived from ethylene glycol, and thermoplastic polycarbonates;

adding an amount of thermoplastic polyolefin to the agitating non-olefinic thermoplastic, the amount of thermoplastic polyolefin added being greater than the amount of non-olefinic thermoplastic, wherein the polyolefin added is maintained at a temperature below the first elevated temperature and results in a temperature decrease to a second temperature, the second temperature sufficient to maintain the added polyolefin in a molten state;

compounding molten non-olefinic thermoplastic and added thermoplastic polyolefin for an interval sufficient to accomplish random dispersion of discrete regions of non-olefinic thermoplastic in a thermoplastic polyolefin matrix; and

cooling the molten dispersion to a temperature below which solidification of the resulting thermoplastic compound occurs.

32. The method of claim 31 wherein the thermoplastic polyolefin is selected from at least one of polyalkylenes, copolymers of polyalkylenes, wherein at least one alkylene monomeric unit contains between 2 and 6 carbon atoms.

33. The method of claim 32 wherein the thermoplastic polyolefin has a first melt flow index and the non-olefinic thermoplastic has a second melt flow index, the first melt flow index being lower than the second melt flow index.

34. The method of claim 31 wherein said compounding step is accomplished by contacting combined thermoplastic materials in a knead melting mechanism sufficient to provide at least one region of high shear kneading.

35. The method of claim 31 wherein the thermoplastic polyolefin is added as a fluidized solid in a weight to weight ratio of greater than 1:1, polyolefin to non-olefinic thermoplastic respectively.

36. The method of claim 35 wherein the thermoplastic polyolefin is added as a fluidized solid in a weight to weight ratio of greater than 2:1, polyolefin to non-olefinic thermoplastic respectively.

37. The method of claim 31 further comprising the step of adding at least one first migratory compatibilizer into the non-olefinic thermoplastic during the initial agitation stage, wherein the organic binder agent is essentially non-reactive to the non-olefinic thermoplastic and polyolefin constituents while resident in the compounding vessel.

38. The method of claim 31 wherein the thermoplastic polyamide is fed to an compounding vessel having at least one non-olefinic thermoplastic

introduction port, the non-olefinic thermoplastic being introduced through the at least one non-olefinic thermoplastic introduction port on an essentially continuous manner, and wherein the thermoplastic polyolefin is fed into the compounding vessel through a polyolefin introduction port in an essentially continuous, the polyolefin introduction port being located downstream of the non-olefinic thermoplastic introduction port.

39. The method of claim 38 wherein the thermoplastic polyolefin is selected from at least one of polyalkylenes, copolymers of polyalkylenes, wherein at least one alkylene monomeric unit contains between 2 and 6 carbon atoms.

40. The method of claim 39 wherein the non-olefinic thermoplastic is a thermoplastic polyamide is selected from at least one of nylon 6, nylon 6,6, nylon 11, and nylon 12.

41. The method of claim 39 wherein the non-olefinic thermoplastic is a thermoplastic polyester derived from ethylene glycol and is selected from at least one of polybutylene terephthalate, polyethylene terephthalate and polytetramethylene terephthalate.

42. The method of claim 39 wherein the non-olefinic thermoplastic is a thermoplastic polycarbonate selected from at least one of linear polycarbonate and branched polycarbonates.

43. The method of claim 38 wherein the thermoplastic polyolefin is added as a fluidized solid in a weight to weight ratio of greater than 1:1, polyolefin to non-olefinic thermoplastic respectively.

44. The method of claim 43 wherein the thermoplastic polyolefin is added as a fluidized solid in a weight to weight ratio of greater than 2:1, polyolefin to non-olefinic thermoplastic respectively.

45. A method for preparing a polymeric composition suitable for use in injection molding processes, the method comprising the steps of:

agitating an amount of a non-olefinic thermoplastic selected from at least one of thermoplastic polyamides, thermoplastic polyesters derived from ethylene glycol and thermoplastic polycarbonates at a first elevated processing temperature, the agitation progressing for an interval and at an temperature sufficient to maintain the thermoplastic polyamide in an essentially molten state;

adding an amount of thermoplastic polyolefin to the agitating non-olefinic thermoplastic, the amount of thermoplastic polyolefin added being greater than the amount of agitating non-olefinic thermoplastic, wherein the added polyolefin is maintained at a temperature below the first elevated temperature and induces in composition temperature decrease to a second temperature, the second temperature sufficient to maintain the added polyolefin in a molten state;

compounding molten non-olefinic thermoplastic and added thermoplastic polyolefin for an interval sufficient to accomplish random dispersion of discrete regions of thermoplastic non-olefinic thermoplastic in a thermoplastic polyolefin matrix; and

cooling the molten dispersion to a temperature below which solidification occurs.

46. The method of claim 45 wherein the thermoplastic polyolefin is selected from at least one of polyalkylenes, copolymers of polyalkylenes, wherein at least one alkylene monomeric unit contains between 2 and 8 carbon atoms.

47. The method of claim 45 wherein the thermoplastic polyolefin is selected from at least one of polypropylene and copolymers of polypropylene.

48. The method of claim 45 wherein the random dispersion of discrete regions of non-olefinic thermoplastic in a thermoplastic polyolefin matrix is characterized by an olefinic matrix which comprises between 40 and 85 % by total

material weight and a non-olefinic portion which comprises between 10 and 35 % by material weight.

49. The method of claim 45 wherein said compounding step is accomplished by contacting combined thermoplastic materials with a twin screw blade having a rotation and orientation sufficient to provide at least one region of high shear.

50. The method of claim 49 wherein the thermoplastic polyolefin has a first melt flow index and the non-olefinic thermoplastic has a second melt flow index, the first melt flow index being lower than the second melt flow index.

51. The method of claim 49 wherein the thermoplastic polyolefin is added as a fluidized solid in a weight to weight ratio of greater than 1:1, polyolefin to non-olefinic thermoplastic respectively.

52. The method of claim 44 wherein the thermoplastic polyolefin is added as a fluidized solid in a weight to weight ratio of greater than 2:1, polyolefin to non-olefinic thermoplastic respectively.